

an oleophobic material.

54. (New) The surface according to claim 1, wherein said surface comprises a metal and is AlMg_3 .

REMARKS

The claims have been amended to place them in more readable form and to respond to the Examiner's rejections under 35 U.S.C. § 112. With regard to the addition of the materials "glass or ceramic" in Claim 5, basis for this addition may be found on page 3, lines 20 and 21 of the specification. With regard to the addition of polyolefins in Claim 27, basis may be found on page 4, lines 10 and 11 of the specification. Claims 52-54 have been added to preferred embodiments. Basis for new Claims 52 and 53 is Claim 1 as originally filed. Basis for new Claim 54 is Claim 7 as originally filed. No new matter has been added into the amended claims or new claims.

REQUEST FOR RECONSIDERATION

Claims 1-10, 27, 28 and 52-54 are active in the case.

The rejection of Claims 1-6, 8-10 and 28 under 35 U.S.C. § 102(b) as anticipated by Clark et al and the rejection of Claims 1-5, 8 and 27 under 35 U.S.C. § 102(b) as anticipated by Takahashi et al is traversed.

The Examiner's position that any ultraphobic surface having a contact angle above 150° would inherently have a surface topography with the value of S of the claims is traversed. Accompanying the response is a Declaration under 37 C.F.R. § 1.132 which uses data obtained from Examples 1, 7, 8 and 10 of Clark et al in order to determine whether any ultraphobic surface having a contact angle above 150° inherently has a surface topography with the value of

S as recited in the claims. The nanostructure of Clark et al in the examples was accurately modeled and the height profile obtained was processed in the same manner as described in the present application (page 14, lines 23-27; page 25, lines 1-22 and page 29, lines 6-19). Finally, S was determined for the ultraphobic surfaces of Examples 1, 7, 8 and 10 of Clark et al and shown to be outside the requirements of the present claims for contact angles ranging from 171-178°. Thus, there is no basis for the Examiner's conclusion that any ultraphobic surface having a contact angle above 150° would inherently have a surface topography with the value of S of the present claims and, therefore, the claims are not anticipated by the references.

The rejection of Claim 7 under 35 U.S.C. §103(a) as unpatentable over Clark et al in view of Baumann et al and the rejection of Claims 6 and 7 under 35 U.S.C. §103(a) as unpatentable over Takahashi et al in view of Baumann et al is traversed.

Baumann et al does not remedy the deficiencies of Clark et al or Takahashi et al, since Baumann et al is cited only for the showing that aluminum-magnesium alloys may be used in the preparation of airplane fuselage surfaces and Baumann et al does not show a surface which meets the S value of the claims. Therefore, the claims distinguish over the combinations of references.

The rejection of Claims 1-10, 27 and 28 under 35 U.S.C. §112, second paragraph, is traversed. Claim 1 has been amended to recite "f" in lower case. The Examiner's statement that hydrophobic and oleophobic overlap in which oleophobic is the narrower statement of the range/limitation is traversed. Hydrophobic and oleophobic are mutually exclusive terms which describe substances that do not adsorb or absorb water in the case of hydrophobic surfaces and describe a substance that does not adsorb or absorb oil in the case of oleophobic surfaces. Page 1, lines 16-21 of the specification sets forth the definition of ultraphobic surfaces as those which repel both oil and water and page 3, lines 8-13 give a definition of the terms hydrophobic and

oleophobic. Therefore, the above terms meet the requirements of 35 U.S.C. §112.

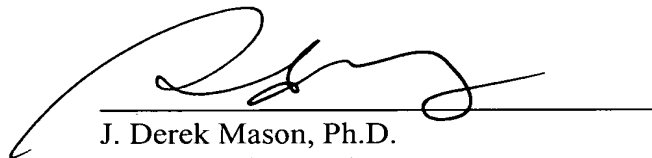
New Claim 54 has been presented in which AlMg₃ is set forth as the ultraphobic surface.

The term "structured" has been deleted from the claims, since with the definition of the surface topography in terms of the function S, it is submitted that the term "structured" is unnecessary to the definition of the surface. The term "ultraphobic" has been deleted from Claims 3-10, 27 and 28. The claims meet the requirements of 35 U.S.C. §112.

It is submitted that Claims 1-10, 27, 28 and 52-54 are allowable and such action is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



J. Derek Mason, Ph.D.
Attorney of Record
Registration No. 35,270

Roland E. Martin
Registration No. 48,082



22850

TEL: 703-413-3000
FAX: 703-413-2220

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MARKED-UP COPY OF AMENDMENT

IN THE CLAIMS

--1. (Twice Amended) [Structured] A surface having ultraphobic properties, comprising a surface topography in which the value of the integral of a function S

$$S(\log f) = a(f) \cdot f \quad (1),$$

which gives a relationship between the spatial frequencies [F] f of the individual Fourier components and their amplitudes $a(f)$, is at least 0.5 between the integration limits

$\log(f_1/\mu\text{m}^{-1}) = -3$ and $\log(f_2/\mu\text{m}^{-1}) = 3$, [and consists of] wherein said surface comprises a hydrophobic or[, in particular,] oleophobic material, or is coated with a hydrophobic or[, in particular,] oleophobic material.

2. (Twice Amended)[Surface] The surface according to Claim 1, wherein the integral is > 0.6 .

3. (Twice Amended) [Ultraphobic] The surface according to Claim 1, wherein said [structured] surface has a contact angle of at least 150° and a roll-off angle of $< 10^\circ$.

4. (Twice Amended) [Ultraphobic] The surface according to Claim 1, wherein said [structured] surface has a contact angle of at least 155° .

5. (Twice Amended) [Ultraphobic] The surface according to Claim 1, wherein said [structured] surface [consists of] comprises metal, [or] plastic, glass or ceramic.

6. (Twice Amended) [Ultraphobic] The surface according to Claim [5]1, wherein [the] said surface comprises metal and is selected from the group consisting of beryllium, magnesium, scandium, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zinc,

aluminum, gallium, yttrium, zirconium, niobium, molybdenum, technetium, ruthenium, rhenium, palladium, silver, cadmium, indium, tin, lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, hafnium, tantalum, tungsten, rhenium, osmium, iridium, platinum, gold, thallium, lead, bismuth, titanium, aluminium, magnesium, nickel and [an alloy] alloys [of said metals] thereof.

7. (Twice Amended) [Ultrapophobic] The surface according to Claim [5]1, wherein [the] said surface comprises metal and is an aluminium-magnesium alloy[, in particular AlMg₃].

8. (Twice Amended) [Ultrapophobic] The surface according to Claim [5]1, wherein [the] said surface comprises plastic and is a thermosetting or thermoplastic polymer..

9. (Twice Amended) [Ultrapophobic] The surface according to Claim [8]1, wherein the said surface comprises a thermosetting polymer and is selected from the group consisting of diallyl phthalate resins, epoxy [resin] resins, urea-formaldehyde resin, melamine-formaldehyde resin, melamine-phenol-formaldehyde resin, phenol-formaldehyde resin, [polyimide] polyimides, silicone [rubber] rubbers, unsaturated polyester [resin] resins and mixtures [of said polymers] thereof.

10. (Twice Amended) [Ultrapophobic] The surface according to Claim 1, wherein [the] said surface [has] comprises a coating [with] of a hydrophobic phobicization auxiliary.

27. (Amended) [Ultrapophobic] The surface according to Claim [8]1, wherein [the] said surface comprises a thermoplastic polymer and is selected from the group consisting of polyolefins, polypropylene, polyethylene, [polycarbonate] polycarbonates, polyester [carbonate] carbonates, [polyester] polyesters, PBT, PET, polystyrene, styrene [copolymer] copolymers, SAN resin, rubber-containing styrene graft [copolymer] copolymers, ABS polymer, [polyamide] polyamides, [polyurethane] polyurethanes, polyphenylene sulphide, polyvinyl chloride and

mixtures [of said polymers] thereof.

28. (Amended) The [ultraphobic] surface [of] according to claim [10]1, wherein [the] said surface comprises a coating of a hydrophobic phobicization auxiliary which comprises a group which is an anionic, cationic, amphoteric or nonionic, interface active group.

52-54. (New).--